

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (currently amended) A method for detecting ~~multiple reiterated oligonucleotides~~ from a target DNA or RNA polynucleotide, said method comprising:
 - (a) ~~hybridizing an initiator with a single stranded target polynucleotide~~
 - (a)(b) incubating said target polynucleotide and with an initiator, with an RNA polymerase, and a terminator, under conditions whereby said initiator hybridizes with said target polynucleotide;
 - (b) extending said initiator until said terminator is incorporated into said oligonucleotide, by the process of abortive transcription;
 - (c) repeating steps (a) and (b), thereby synthesizing multiple reiterative oligonucleotides oligonucleotide transcripts from said target polynucleotide, wherein said initiator is extended until said terminator is incorporated into said oligonucleotide thereby synthesizing multiple reiterative ~~oligonucleotides~~ oligonucleotide transcripts; and
 - (d) detecting or quantifying said reiterative oligonucleotide transcripts, wherein the presence of said reiterative oligonucleotide transcripts is indicative of the presence of said target DNA or RNA polynucleotide.
2. (currently amended) The method of claim 1, further comprising detecting or quantifying said reiterative oligonucleotide ~~transcript~~ transcripts by modifying a nucleoside or nucleotide in at least one of the members selected from the group consisting of said terminator, said initiator.
3. (original) The method of claim 2, wherein said modifying comprises incorporating a label moiety.
4. (original) The method of claim 3, wherein said label moiety comprises a

fluorophore moiety.

5. (original) The method of claim 4, wherein said fluorophore moiety comprises a fluorescent energy donor and a fluorescent energy acceptor wherein said moiety is detected or quantified by fluorescence resonance energy transfer.

6. (previously presented) The method of claim 1, wherein said polymerase is selected from the group consisting of: a DNA-dependent RNA polymerase, an RNA-dependent RNA polymerase, a modified RNA polymerase, and a primase.

7. (previously presented) The method of claim 6, wherein said polymerase comprises an RNA polymerase derived from one of *E. coli*, *E. coli* bacteriophage T7, *E. coli* bacteriophage T3, and *S. typhimurium* bacteriophage SP6.

8. (original) The method of claim 1, wherein said initiator is an RNA primer.

9. (currently amended) The method of claim 1, wherein said initiator comprises a molecule selected from the group consisting of: nucleosides, nucleoside analogs, nucleotide analogs and nucleotides of lengths from ~~1-25 nucleotides, 26-50 nucleotides, 51-75 nucleotides, 76-100 nucleotides, 101-125 nucleotides, and 126-150 nucleotides, 151-175 nucleotides, 176-200 nucleotides, 201-225 nucleotides, 226-250 nucleotides, and greater than 250~~ 1-250 nucleotides.

10. (currently amended) The method of claim 1, wherein said reiterative oligonucleotide transcripts being synthesized are one of the lengths selected from the group consisting of: about 2 to about ~~26 nucleotides, about 26 to about 50 nucleotides, about 50 nucleotides to about 100 nucleotides~~ [[,]] and greater than 100 nucleotides.

11. (previously presented) The method of claim 1, wherein said incubating further comprises a target site probe specific for a region on said single-stranded target polynucleotide.

12. (previously presented) The method of claim 1, wherein said chain terminator comprises a nucleotide analog.

13-84 (cancelled)

85. (currently amended) ~~The method of claim 1, wherein said A method for detecting an oligonucleotide synthesized from a target polynucleotide sequence is DNA. , the method comprising:~~

- ~~—— (a) — hybridizing a primer with a single stranded target sequence;~~
- ~~—— (b) — extending said primer with a polymerase and nucleotides, such that said polymerase reiteratively synthesizes a nucleotide sequence; and~~
- ~~—— (c) — detecting oligonucleotides comprised of repeat sequences synthesized by said polymerase.~~

86. (currently amended) The method of claim 85, further comprising modifying at least one of said ~~primer~~ initiator ~~and said~~ or nucleotides used to extend said initiator to enable detection of said reiterative nucleotide transcripts ~~oligonucleotide comprised of repeat sequences.~~

87. (currently amended) The method of claim 86, wherein modifying ~~further~~ comprises incorporating an independently selected label moiety into at least one of said ~~primer~~ initiator and said nucleotides.

88. (previously presented) The method of claim 87, wherein said label moiety comprises a fluorophore moiety.

89. (original) The method of claim 88, wherein detecting comprises detecting by fluorescence resonance energy transfer and said fluorophore moiety comprises one of a fluorescent energy donor and a fluorescent energy acceptor.

90. (withdrawn) The method of claim 85, wherein said polymerase is selected from the group consisting of *Escherichia coli* DNA polymerase, T7 DNA polymerase, T4 DNA polymerase, *Taq* thermostable DNA polymerase, terminal transferase, and telomerase.

91. (currently amended) The method of claim 85, wherein said ~~primer~~ initiator comprises from 1 to about 25 nucleotides.

92. (currently amended) The method of claim 85, wherein said reiterative oligonucleotide transcripts ~~repeat-sequence~~ comprises from about 2 to about 26 nucleotides.

93. (currently amended) The method of claim 85, wherein said detecting comprises hybridizing a complementary sequence to the synthesized reiterative oligonucleotide transcript ~~comprising repeat-sequences~~.

94. (original) The method of claim 93, wherein said complementary sequence is modified to comprise an independently selected label moiety.

95. (original) The method of claim 94, wherein said label moiety comprises a fluorophore moiety.

96. (currently amended) The method of claim 85, further comprising immobilizing said ~~single-stranded~~ target sequence.

97. (currently amended) The method of claim ~~[[85]]~~ 96, wherein immobilizing comprises hybridizing a capture probe to a portion of said ~~single-stranded~~ target sequence.

98-99 (cancelled)

100. (previously presented) The method of any one of claims 4, 88, or 95 wherein said fluorophore moiety is selected from the group consisting of: 4-acetamido-4'-isothiocyanatostilbene-2,2'-disulfonic acid; acridine and derivatives: acridine, acridine isothiocyanate; 5-(2'-aminoethyl)aminonaphthalene-1-sulfonic acid (EDANS); 4-amino-N-[3-vinylsulfonyl]phenyl]naphthalimide-3,5 disulfonate; N-(4-amino-1-naphthyl)maleimide; anthranilamide; BODIPY; Brilliant Yellow; coumarin, and derivatives: coumarin, 7-amino-4-methylcoumarin (AMC, Coumarin 120), 7-amino-4-trifluoromethylcoumarin (Coumarin 151); cyanine dyes; cyanosine; 4',6-diaminidino-2-phenylindole (DAPI); 5', 5''-dibromopyrogallol-sulfonaphthalein (Bromopyrogallol Red); 7-diethylamino-3-(4'-isothiocyanatophenyl)-4-methylcoumarin; diethylenetriamine pentaacetate; 4,4'-diisothiocyanatodihydro-stilbene-2,2'-disulfonic acid; 4,4'-diisothiocyanatostilbene-2,2'-disulfonic acid; 5-[dimethylamino]naphthalene-1-sulfonyl chloride (DNS, dansylchloride); 4-dimethylaminophenylazophenyl-4'-isothiocyanate (DABITC); eosin and derivatives: eosin, eosin isothiocyanate; erythrosin and derivatives: erythrosin B, erythrosin, isothiocyanate; ethidium; fluorescein and derivatives: 5-carboxyfluorescein (FAM), 5-(4,6-dichlorotriazin-2-yl)amino fluorescein (DTAF), 2',7'-dimethoxy-4'5'-dichloro-6-carboxyfluorescein (JOE), fluorescein, fluorescein isothiocyanate, QFITC, (XRITC); fluorescamine; IR144; IR1446; Malachite Green isothiocyanate; 4-methylumbelliferoneortho cresolphthalein; nitrotyrosine; pararosaniline; Phenol Red; B-phycoerythrin; o-phthaldialdehyde; pyrene and derivatives: pyrene, pyrene butyrate, succinimidyl 1pyrene; butyrate quantum dots; Reactive Red 4; rhodamine and derivatives: 6-carboxy-X-rhodamine (ROX), 6-carboxyrhodamine (R6G), lissamine rhodamine B, sulfonyl chloride rhodamine (Rhod), rhodamine B, rhodamine 123, rhodamine X isothiocyanate, sulforhodamine B, sulforhodamine 101, sulfonyl chloride derivative of sulforhodamine 101 (Texas Red); N,N,N',N'-tetramethyl-6-carboxyrhodamine (TAMRA); tetramethyl rhodamine; tetramethyl rhodamine isothiocyanate (TRITC); riboflavin; rosolic acid; terbiun chelate derivatives; Cy 3; Cy 5; Cy 5.5; Cy 7; IRD 700; IRD 800; La Jolla Blue; phthalocyanine; and naphthalocyanine.

101. (withdrawn) A method for detecting multiple reiterated oligonucleotides from a

target DNA or RNA polynucleotide, said method comprising:

- (a) incubating a single-stranded target polynucleotide in a mixture comprising an initiator, and an RNA polymerase;
- (b) synthesizing multiple oligonucleotide transcripts from said target polynucleotide, wherein said initiator is extended until terminated due to nucleotide deprivation, thereby synthesizing multiple abortive reiterative oligonucleotide transcripts; and
- (c) detecting or quantifying said reiterative oligonucleotide transcripts.

102-114 (cancelled)

115. (currently amended) A method for synthesizing multiple reiterative ~~olignucleotide~~ oligonucleotide transcripts from a target DNA or RNA polynucleotide, said method comprising:

- (a) hybridizing an initiator with a single stranded target polynucleotide
- (b) incubating said target polynucleotide and initiator with an RNA-polymerase, and a terminator;
- (c) synthesizing multiple ~~oligonucleotides~~ oligonucleotide transcripts from said target polynucleotide by abortive reiterative transcription, ~~wherein said initiator is extended until said terminator is incorporated into said oligonucleotides thereby synthesizing multiple reiterative oligonucleotide transcripts.~~

116. (previously presented) The method of claim 115, further comprising synthesizing multiple reiterative oligonucleotide transcripts by modifying a nucleotide in at least one of the members selected from the group consisting of said terminator, and said initiator.

117. (original) The method of claim 116, wherein said modifying comprises incorporating a label moiety.

118. (original) The method of claim 117, wherein said label moiety comprises a fluorophore moiety.

119. (original) The method of claim 118, wherein said fluorophore moiety comprises a fluorescent energy donor and a fluorescent energy acceptor.

120. (original) The method of claim 115, wherein said polymerase is selected from the group consisting of: a DNA-dependent RNA polymerase, an RNA-dependent RNA polymerase and a modified RNA-polymerase, and a primase.

121. (original) The method of claim 120, wherein said polymerase comprises an RNA polymerase derived from one of *E. coli*, *E. coli* bacteriophage T7, *E. coli* bacteriophage T3, and *S. typhimurium* bacteriophage SP6.

122. (currently amended) The method of claim 115, wherein said initiator comprises a molecule selected from the group consisting of: nucleosides, nucleoside analogs, nucleotide analogs and nucleotides of a length selected from the group consisting of ~~[[:]] 1-25 nucleotides, 26-50 nucleotides, 51-75 nucleotides, 76-100 nucleotides, 101-125 nucleotides, and 126-150 nucleotides, 151-175 nucleotides, 176-200 nucleotides, 201-225 nucleotides, 226-250~~ 1-250 ~~nucleotides, and greater than 250 nucleotides.~~

123. (currently amended) The method of claim 115, wherein said reiterative oligonucleotide transcripts being synthesized are ~~one of the a lengths~~ length ~~selected from the group consisting of: of about 2 to about 26 nucleotides, about 26 to about 50 nucleotides and about 50 nucleotides to about 100 nucleotides.~~

124. (original) The method of claim 115, wherein said incubating further comprises a target site probe specific for a region on said single-stranded target polynucleotide.

125. (currently amended) The method of claim 115, wherein said ~~chain~~ terminator comprises a nucleotide analog.

126. (currently amended) The method of any one of claims 1 ~~[[,]] 401,~~ and 115, wherein said incubating further comprises in the presence of ribonucleotides.

127. (original) The method of claim 126, wherein said ribonucleotides are modified.
128. (original) The method of claim 127, wherein said modifying further comprises incorporating an independently selected label moiety.
129. (original) The method of claim 128, wherein said label moiety comprises a fluorophore moiety.
- 130-134 (cancelled)
135. (currently amended) The method of any one of claims 1, 85 ~~[[,]] 101~~ and 115, wherein said initiator is selected from the group consisting of: nucleosides, nucleoside analogs, nucleotides, and nucleotide analogs.
136. (previously presented) The method of claim 85, wherein said target sequence and said primer are DNA.
137. (withdrawn) The method of claim 136, wherein said polymerase is a DNA-dependent DNA polymerase.
138. (previously presented) A method for synthesizing multiple reiterative oligonucleotide transcripts comprising:
- (a) hybridizing a single stranded target polynucleotide with an abortive promoter cassette comprising a sequence that hybridizes to the single stranded target polynucleotide, and a region that can be detected by transcription by a polymerase;
 - (b) incubating said target polynucleotide with an RNA polymerase and an initiator;
 - (c) synthesizing an oligonucleotide transcript that is complementary to the initiation start site of said abortive promoter cassette, wherein said initiator is

extended until termination occurs through nucleotide deprivation; thereby synthesizing multiple reiterative oligonucleotide transcripts; and

(d) detecting or quantifying said multiple reiterative oligonucleotide transcripts.

139. (previously presented) The method of claim 138 further comprising:
- (a) immobilizing a capture probe designed to hybridize with a target polynucleotide in said test sample;
 - (b) hybridizing said capture probe with a test sample that potentially contains said target polynucleotide.
140. (previously presented) The method of any one of claims 1, 115, and 138, wherein the target polynucleotide is RNA.
141. (previously presented) The method of claim 140, wherein the RNA is mRNA.
142. (previously presented) The method of claim 140, wherein the RNA polymerase is an RNA-dependent RNA polymerase.
143. (previously presented) The method of claim 142, wherein the RNA-dependent RNA-polymerase is poliovirus RNA polymerase.
144. (previously presented) The method of claim 140, further comprising (a) incubating said target RNA with a reverse transcriptase enzyme.
145. (previously presented) The method of any one of claims 1, 115, and 138, comprising incubating said target polynucleotide with additional ribonucleotides.
146. (previously presented) The method of claim 145, wherein said ribonucleotides are modified.

147. (previously presented) The method of claim 146, wherein said modification comprises the incorporation of a labeling moiety.
148. (previously presented) The method of any of claims 1, 115 and 138, wherein the target nucleic acid is from a virus.
149. (previously presented) The method of claim 148, wherein the nucleic acid is RNA.
150. (previously presented) The method of any one of claims 1, 115 and 138, wherein the target nucleic acid is from a bacterium.